

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

28472
66
Home

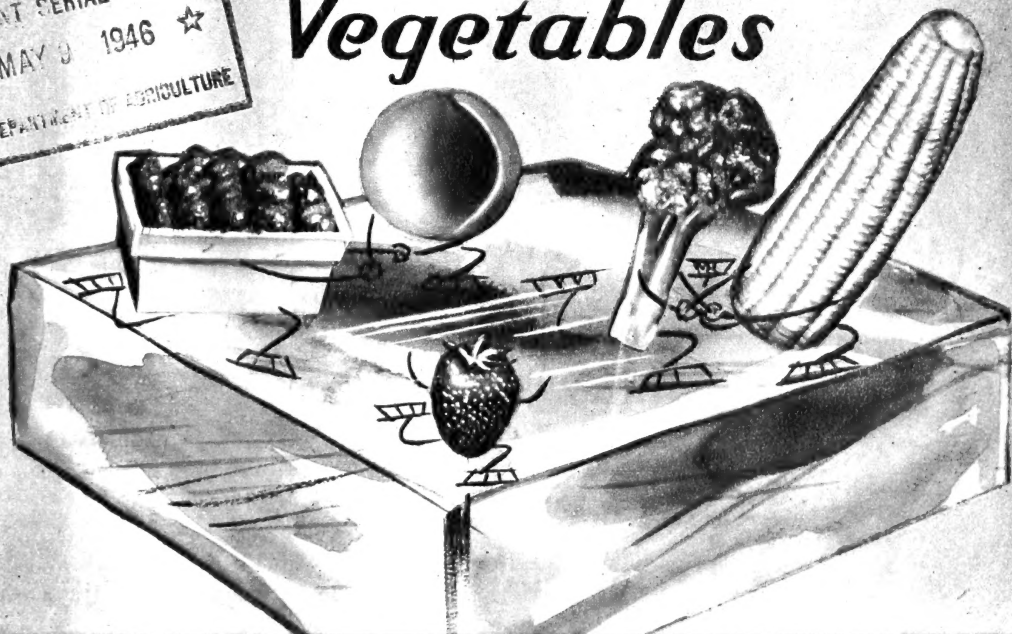
FREEZING

*of Fruits and
Vegetables*

LIBRARY
CURRENT SERIAL RECORD

☆ MAY 9 1946 ☆

U. S. DEPARTMENT OF AGRICULTURE



DEPARTMENT OF AGRICULTURE AIS-48

HOME FREEZING OF FRUITS AND VEGETABLES

With a home freezer or neighborhood locker plant, you can bring garden freshness to your family table all year long. Freezing gives you bright color, fresh flavor, and most of the vitamin values of fresh fruits and vegetables.

Frozen foods keep for many months because organisms that cause spoilage are not active at 0° F., the temperature at which frozen food should be stored. Since freezing does not destroy these organisms, they become more active as the temperature rises. Therefore, frozen foods lose quality and may spoil soon after they are thawed.

Many frozen foods decrease in quality as they are held, but if properly prepared and stored they maintain their quality for as long as 8 to 12 months. It is wise to plan ahead so you freeze only as much of the different foods as your family will use during the year.

By carefully following these modern methods for preparing and packaging, you can successfully freeze most fruits and vegetables.

Freeze the Best

Food that comes out of the freezer won't be any better than the food you put in. Best for freezing are firm, well ripened fruits and fresh, tender vegetables right from the orchard or garden.

Freeze fruits or vegetables as quickly as possible after picking. If you must hold foods a day, keep them as cool as possible.

Not all varieties of fruits and vegetables freeze equally well. For a list of those in your locality that give highest quality when frozen, write to your State college of agriculture or experiment station.

Wash and Sort Carefully

Don't freeze foods that are overripe, bruised, or show signs of decay. Wash food thoroughly in clear water—lift out of washing water so dirt won't drain back on food. Sort according to size; big pieces need longer scalding than the small and medium.

Peel, Trim, Slice

Prepare foods as for cooking or as served at the table. Some fruits have better flavor and texture when sliced than when frozen whole. See pages 12 and 18 for ways to prepare each vegetable and fruit.

Special Steps for Fruits

Prevent darkening.—Some light-colored fruits need special treatment to prevent darkening.

One way is to let peaches or similar fruit stand in a citric acid solution for 1 to 2 minutes before packing in sirup or sugar (the sirup pack retains color better than the dry sugar pack). To make solution, dissolve $\frac{1}{4}$ teaspoon citric acid in 1 quart water (you'll need about a gallon of solution for 1 bushel of fruit). A more effective though slightly more expensive way if you are packing

the fruit in a sirup, is to add $\frac{1}{4}$ teaspoon ascorbic acid (vitamin C) to each 1 or $1\frac{1}{2}$ cups of sirup. You can buy citric or ascorbic acid at the drug store.

To keep apples from darkening, scald slices in steam or boiling water for $1\frac{1}{2}$ to 2 minutes.

Or light-colored fruits may be put directly into sugar sirup, but they will darken during freezing and thawing unless completely covered with sirup.

Prepare sweetening.—Some fruits such as loganberries, raspberries, cranberries, and rhubarb are good frozen without sugar. But most fruits have better texture and flavor if sweetened before freezing. This may be done by mixing them with dry sugar, or by packing in a sugar sirup. You can make the sirup several days ahead and keep it in the refrigerator thoroughly chilled for use.

The table on page 18 tells how to prepare each fruit, how much sugar and water goes into the sirup, or how much dry sugar to mix with the fruit.

Special Steps for Vegetables

For all vegetables except green peppers, the dry pack is satisfactory and less trouble than the brine pack. Green peppers are best packed in a weak salt solution (1 teaspoon salt to 1 cup water).

Scald before packing.—Scalding lessens the action of enzymes present in all living material. Though enzymes help in growth and ripening, they cause food to lose vitamins as well as flavor and color after the food reaches maturity and is gathered. These changes continue even after freezing if the food is not scalded long enough.

Scalding also brightens the color and softens vegetables, making them easier to pack. Without scalding, frozen vegetables fade in color and develop an "off" flavor in a few months.

Scalding vegetables in boiling water gives a satisfactory product. Broccoli has slightly better quality if scalded in steam. The leafy vegetables, such as spinach or chard, must be scalded in boiling water to be uniformly heated through.

Prepare vegetables as directed (p. 12), since size of pieces affects scalding time. Scald a small quantity of food at a time. **To scald in boiling water**, put about 1 pound of vegetables in a fine-mesh wire basket. A wire ~~cover~~ holds food under water. Lower basket into rapidly boiling water—at least 1 gallon or more to cover the food. Put the lid on the kettle and start counting time. Scald for as long as directed for each vegetable (p. 12).

To scald in steam, see directions for broccoli on page 10.

Chill in cold water.—The next step after scalding is to chill the food quickly and thoroughly. This stops the cooking and cuts down the chance for spoilage organisms to grow. Plunge the vegetables into iced water, 60° F. or lower. You'll need about 20 pounds of ice to cool 20 pounds of vegetables. Running water may be used if it is cold enough (around 60°).

It usually takes as long to chill as to scald. Test for coolness by biting a piece of the food. When it feels cool to the tongue, remove the vegetable from cold water and drain thoroughly.



Moisture-vapor-resistant containers:

1. Carton with heat-sealing liner of specially treated cellophane.
2. Carton with heat-sealing liner of specially treated paper.
3. Waxed cup with set-in lid.

4. Stockinette covering for single-thickness cellophane bag.
5. Heat-sealing sheets of specially treated cellophane to make into bags.
6. Heat-sealing, cube-shaped carton, with plastic coating.

7. Carton with specially treated, heat-sealing cellophane overwrap.
8. Heat-sealing bag of specially treated cellophane (single thickness).
9. Heat-sealing bag of specially treated cellophane (double thickness).

Package right

The right containers for frozen foods are of moisture-vapor-resistant material that can be sealed tightly. If foods aren't packaged right, they dry out and lose vitamins.

Many types of heat-sealed packages are satisfactory. Plastic-coated boxes, and cartons with specially treated liners or covers protect foods well and are easy to handle and store. There are also ready-made bags for frozen foods or you can make bags of any shape or size from specially treated heat-sealing material by running a warm iron over the folded edges.

Cover single-thickness cellophane bags with a carton or mesh cloth known as "stockinette."

Test heat-sealing liners with water to be sure they

don't leak. After the liner dries, re-seal leaky seams with a warm iron.

Waxed cups are convenient but the seal is not vapor-proof and food dries out and may darken during a long period of storage.

Glass jars may be used, but they do not pack so well in the freezer and may break. Foods must be thawed before cooking to remove from jar. Tin cans are satisfactory for fruits, but should not be used for vegetables until further research is done.

Leave head space.—Food expands as it freezes. When packed without liquid, leave about 1/2 inch head space at top of carton or bag for foods that pack tightly. No head space is needed for loosely packed foods such as broccoli or cauliflower.

For foods packed in liquid, purees, or crushed fruits, leave about 1 inch head space in cartons or bags; 1½ inches with glass jars or tin cans.

Seal tightly.—After filling a carton or bag, wipe inside edges with a clean cloth to remove moisture that would prevent a tight seal. Press out all air possible from top of bag. Seal tightly.

To heat-seal a bag or a box with an overwrap or a special coating, press with a warm iron. Use just enough heat and pressure to hold the edges tightly together. Too much heat may cause an imperfect seal.

Label plainly.—Even if the package has a "window," you will want to label it with the date it was packed, the variety, and any special treatment.

Special stamps, labels, tape, and crayons are made for labeling. You can use different colors for different foods, or to indicate dates of storage so foods stored longest can be used first.

Freeze Quickly

Freeze foods as soon as possible after they are packed. Keep packages cold in the refrigerator until all are ready for freezing. If you take food to a locker plant, transfer packages to an insulated box for carrying. At the locker plant, have foods frozen in the fast-freezing room, if one is available, before placing in your locker.

If you have a home freezer, be sure the temperature of the freezing compartment is 0° F. or lower. Follow these rules to speed freezing:

Don't freeze too many packages at once. The manufacturer of your freezer can tell you how much food to

freeze at one time or in a 24-hour period.

Place packages against freezing plates or coils, but spread them out so air can move between them.

Remember that thick or heavily wrapped packages take longer to freeze than those of medium size with only enough wrapping to protect the food.

Store at 0° F.

After freezing, store food at 0° F. or lower. At higher temperatures, frozen foods lose both eating quality and vitamin values.

To help you know how many and what kinds of frozen foods are in the freezer, post an up-to-date list near the freezer. List the foods as you put them into the freezer, and check them off as you take them out, so packages won't be lost or forgotten.

If power is interrupted or freezer fails to operate normally, do not open the cabinet. Food in a loaded cabinet will usually stay frozen for 2 days, even in summer. In a cabinet with less than half a load, food may not stay frozen for more than a day. Covering the top and sides of the cabinet with heavy blankets or other insulation will prolong the time the food will stay frozen.

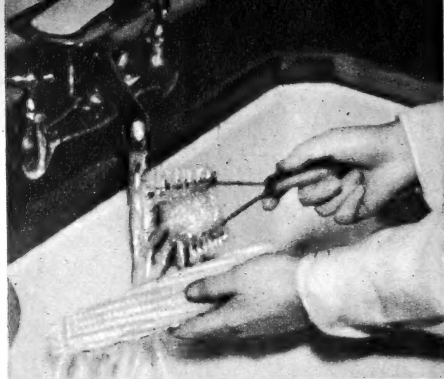
If repairs cannot be made in 1 or 2 days, get dry ice, if available, and place in each compartment as soon as possible. Fifty pounds in a 20 cubic foot cabinet should hold the temperature in a cabinet with less than a half load under freezing for 2 to 3 days and in a loaded cabinet 3 to 4 days. If you can't get dry ice, try to locate a locker plant and move the food there in insulated boxes.

Freezing Corn



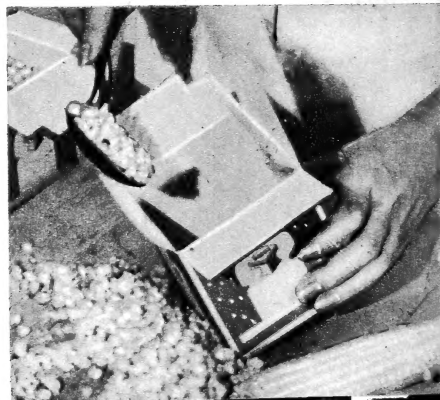
1. Husk corn that is at just the right stage for eating. Kernels will be fully formed, and the milk thin and sweet. Trim off any undeveloped or wormy sections.

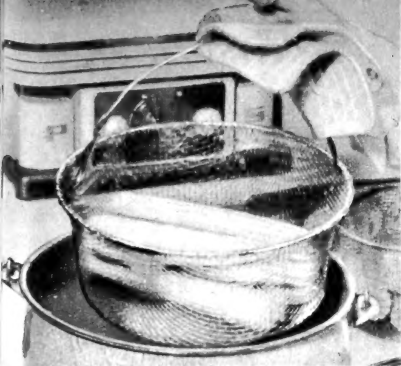
Whole-kernel corn has proved most successful for freezing. Though many people like to freeze corn on the cob, it is sometimes disappointing because it takes up so much freezer space and does not have the flavor of fresh corn on the cob.



2. Use a dry vegetable brush to remove silks. Then wash or scrub the ears in cold water.

6. Pack into moisture-vapor-resistant containers. Fill to within $\frac{1}{2}$ inch from top.





3. Dip corn in rapidly boiling water 7 minutes. Cover to hold in steam. Start counting time as soon as corn is in. Keep heat high.



4. Cool in iced or running cold water for 7 minutes or until a kernel pulled from cob feels cold to tongue.



5. For whole-kernel style, cut corn off cob with sharp knife. Don't cut too deep. A nail in cutting board holds cob firmly.

7. Close and heat-seal box with a warm iron. When iron is too hot, plastic coating on this type of carton melts away so box will not seal.



8. Keep filled, labeled containers cold in refrigerator until all are ready to be frozen.



9. Place containers in insulated box for taking to locker plant, or freeze in home cabinet. When frozen, store at 0° F. or lower.





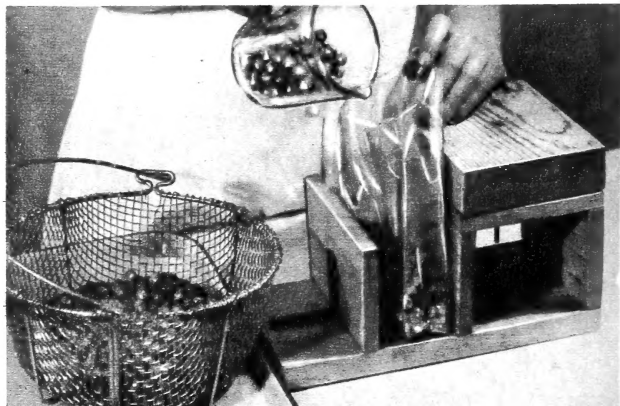
1. Shell freshly picked, sweet, tender peas. Sort out immature and tough ones, unsuitable for freezing.

Vegetables such as peas and sweet corn lose quality very rapidly after picking. They become starchy and lose sweetness if held at summer temperature and should be frozen within a few hours.



2. Wash peas and pour into wire basket to drain.

5. Pour peas into freezing package, leaving $\frac{1}{2}$ inch head space at top. Wipe moisture from inside edges of bag. Press out air.





3. Dip about 1 pound of peas into rapidly boiling water for 1 minute. Note wire lid that holds peas under water. Cover kettle and begin to count time.



4. Chill scalded peas at once in iced water or running cold water until a broken pea feels cold to tongue. Drain.

6. Heat-seal bag, using a warm hand iron or a curling iron. A wooden box or platform is convenient for this job.



7. Put filled containers in freezing compartment. When frozen, store at 0° F.





1. Use freshly gathered broccoli with tightly budded, compact heads. If flowers show yellow, broccoli is too old for freezing.

Broccoli has better quality when scalded in steam. To steam scald, you need a kettle with a tight lid and a rack to hold the scalding basket at least 1½ to 2 inches above the boiling water. Use an inch or two of water in the kettle. Place a single layer of broccoli in the basket so steam reaches all parts quickly. Cover kettle and keep heat high. Start counting time as soon as the lid is on.



2. Trim off large leaves and tough ends of stalks. Wash broccoli thoroughly, pressing the buds apart as you wash.

6. Remove from scalding kettle. Chill broccoli at once in cold running water or iced water until a broken piece feels cold to tongue.





3. Soak stalks head down in salt water (4 teaspoons salt to 1 gallon cold water) about half an hour. This drives out green worms and tiny bugs.



4. Cut broccoli lengthwise, into uniform pieces, leaving the heads about $1\frac{1}{2}$ inches across. This insures uniform scalding and makes attractive pieces for serving

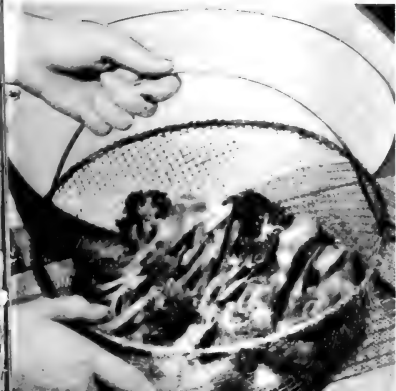


5. Steam scald by placing broccoli over rapidly boiling water. Cover kettle and steam 5 minutes. Keep the heat high.

7. Lift basket from cold water. Shake off all excess water possible, and let broccoli drain a few minutes.

8. Pack broccoli so some heads are at one end of box, some at the other. This saves space. Fill box to top. Broccoli packs loosely, so you don't need to allow space for it to expand.

9. Heat-seal this cellophane-covered package on the outside with a warm iron. After freezing, store at 0° F. Handle this type of package carefully so you won't tear the wrapper.



• V E G E T A B L E S F O R F R E E Z I N G •

VEGETABLE	HOW TO PREPARE	TIME TO SCALD*
Asparagus	Wash well and cut into desired lengths. Sort into 3 groups, according to thickness of stalk. Scald, chill, and pack.	2 to 4 minutes in boiling water, according to size of stalk.
Beans, lima	Shell, wash, and sort according to size. Scald and chill. Then sort out any beans that have turned white; these may be cooked or canned. Pack.	2 to 3 minutes in boiling water, according to size.
Beans, snap	Wash well, cut off stem and tips. Leave whole, slice, or cut into pieces. Scald, chill, and pack.	2 to 3 minutes in boiling water.
Broccoli	Cut off large leaves and tough stalks. Wash well and soak, heads down in salted water (4 teaspoons salt to 1 gallon cold water), for about 1/2 hour. Split lengthwise so heads are not more than 1 1/2 inches across. Scald, chill, and pack.	5 minutes in steam, or 4 minutes in boiling water.
Cauliflower	Select white, compact heads. Break flowerlets into pieces about 1 inch across. Wash, scald, chill, and pack.	3 minutes in boiling water.
Corn, on cob	Husk, remove silk and trim off bad spots. Wash. Scald, chill, and pack.	7 minutes in boiling water for slender ears; 9 minutes for medium; 11 minutes for large, thick ears.
Corn, whole-grain.	Husk, remove silk, and trim off bad spots. Wash and sort according to thickness of ear. Scald, then chill. Cut kernels off cob. Pack.	5 to 7 minutes in boiling water.
Greens	Wash well, remove imperfect leaves and large, tough stems. Scald, chill, and pack.	1 to 2 minutes in boiling water.

PREPARING AND PACKING

VEGETABLE	HOW TO PREPARE	TIME TO SCALD*
Peas	Shell, sort out immature and tough peas, wash, scald, chill, and pack.	1 minute in boiling water.
Peppers, green, and pimiento...	Wash. Remove seeds and slice or cut as desired. Scald and chill. Pack in brine of 1 teaspoon salt to 1 cup cold water.	2 minutes in boiling water.
Soybeans	Boil in pods for 5 minutes. Chill. Squeeze beans out of pods. Wash, drain, and pack.	No additional scalding required.

*If you live 5,000 or more feet above sea level, scald the vegetables 1 minute longer.

Head space:

In carton or bag—

When packed without liquid, leave $\frac{1}{2}$ inch head space for vegetables that pack tightly, such as peas and corn. No head space is needed for vegetables that pack loosely, such as broccoli and cauliflower.

For vegetables packed with brine or for vegetable purees, leave 1 inch head space.

In glass jars or tin cans leave $1\frac{1}{2}$ inches head space.

Vegetables not given in table:

The table above gives recommendations for those vegetables most commonly frozen. Other vegetables such as beets, brussels sprouts, cabbage, carrots, mushrooms, okra, and sweetpotatoes have been frozen successfully and directions have been developed by some of the State agricultural experiment stations.

Whole tomatoes, lettuce, celery, cucumbers, and onions have not been frozen satisfactorily.



Select tree-ripened freestone peaches at just the right stage for eating, and use only varieties recommended for freezing.

Sort peaches carefully. Remove those that are overripe and bruised. The good parts of these may be made up into frozen puree or jams and fruit butter.

Peaches, like other tree fruits, may be packed with dry sugar or in a sugar sirup. If you use sirup, you'll need about 3 gallons for 1 bushel of medium-sized peaches.

To keep peaches from darkening, you can use a citric acid dip before packing in sirup or dry sugar or add ascorbic acid directly to the sugar sirup (see p. 2 for directions).



1. Dip fully ripe, sound freestone peaches about 15 to 30 seconds in boiling water to loosen skins. The riper the fruit, the less scalding needed.

5. Cover peaches with cold sugar sirup (see p. 19). The home-made funnel and stand are handy.

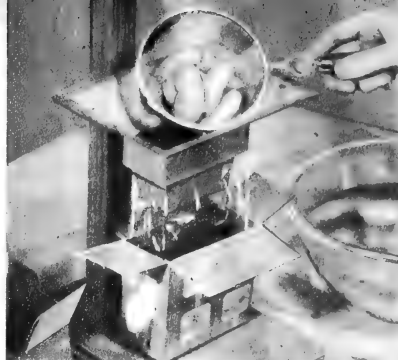




2. Chill peaches quickly in cold water for 15 to 30 seconds. This stops the cooking action.



3. Pit peaches, slip peel from halves, and cut in sections. A cutting board is useful. Handle fruit quickly so it won't darken.

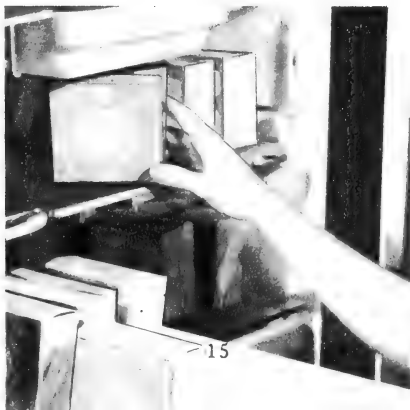


4. If using a citric acid dip to prevent darkening, place fruit at once in the cold solution for 1 to 2 minutes. Drain. Fill containers to within 1 inch from top.

6. Wipe the inside edges of liner clean and dry; press out air and seal with a warm iron. Home-made wooden platform makes it easier to seal the liner.



7. Put filled, labeled boxes into refrigerator to keep cold until all are ready to go into freezer.



8. Freeze. As soon as peaches are frozen store at 0° F. or lower.





1. Carefully sort and cap strawberries. Do not use berries that are green, crushed, or overripe.

4. Fill containers to within 1 inch from top. Cover berries with juice. If necessary, press down on berries with a spoon until juice covers them.



Strawberries have better texture and flavor when sweetened with dry sugar before freezing. One cup of sugar with 5 to 8 cups of fruit gives good results. After adding the sugar, turn the berries over and over until all the sugar is dissolved and juice is formed for covering the berries when packed.



2. Wash berries—a few at a time—in cold water. Lift the berries from the water into a colander to drain.

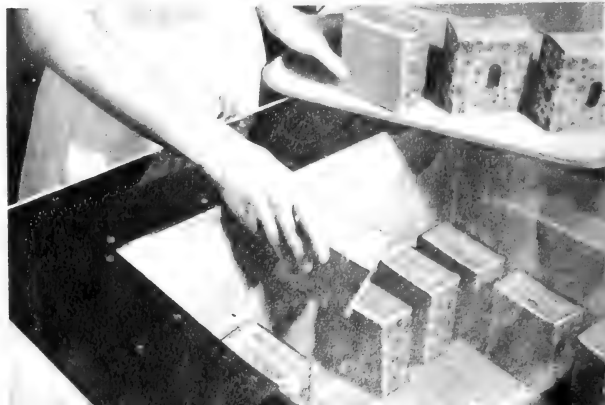


3. Mix whole or sliced berries with sugar, using 1 cup sugar with 5 to 8 cups of berries. Turn over and over until all sugar is dissolved.

5. Wipe the inside edges of liner clean and dry. Press out air, and seal edges together with a warm iron. Label.



6. For rapid freezing, place boxes of berries against walls of freezing compartment, allowing space for air to circulate between packages. When frozen, store at 0° F. or lower.



• FRUITS FOR FREEZING •

FRUIT	HOW TO PREPARE	HOW TO PACK
Apples	Peel, core, and cut into sections of uniform thickness (about 12 sections for medium-sized, more for larger apples to insure sufficient scalding). Scald apples in steam or boiling water $1\frac{1}{2}$ to 2 minutes to prevent darkening. Or if sirup is used for packing you can slice apples directly into it.	Pack in 1 part by weight of sugar to 3 or 4 parts by weight of fruit (1 cup sugar to 5 cups fruit); or in sirup to cover (3 to 4 cups sugar to 4 cups water)
Apricots	Sort for ripeness. Wash, halve, pit, and cut in sections. To keep from darkening, dip for 1 to 2 minutes in a solution of $\frac{1}{4}$ teaspoon citric acid dissolved in 1 quart water or use ascorbic acid (see How to Pack).	<p>With citric acid. Pack in 1 part by weight of sugar to 3 or 4 parts by weight of fruit (1 cup sugar to $4\frac{1}{2}$ to 6 cups fruit); or in sirup to cover (3 to 4 cups sugar to 4 cups water).</p> <p>With ascorbic acid. Put apricots directly into sugar sirup to which has been added $\frac{1}{4}$ teaspoon ascorbic acid to each 1 to $1\frac{1}{2}$ cups sirup.</p>
Berries (except blueberries and strawberries)	Pick over, wash, drain well. Do not wash raspberries unless necessary.	Pack without sugar; or pack in 1 part by weight of sugar to 4 parts by weight of fruit (1 cup sugar to 6 cups fruit); or in sirup to cover (3 cups sugar to 4 cups water).
Blueberries	Pick over, wash, drain well.	Pack in 1 part by weight of sugar to 4 parts by weight of fruit (1 cup sugar to 6 cups fruit); or in sirup to cover (3 cups sugar to 4 cups water; or pack without sugar).
Cherries, sour.	Wash, drain, and pit.	Pack in 1 part by weight of sugar to 3 or 4 parts by weight of fruit (1 cup sugar to 4 to 5 cups fruit).
Cherries, sweet.	Wash and drain. Pit or not, as desired.	<p>Pitted cherries. Pack in 1 part by weight of sugar to 4 parts by weight of fruit (1 cup sugar to 5 cups fruit).</p> <p>Whole cherries. Pack in sirup to cover (3 cups sugar to 4 cups water with $\frac{1}{4}$ teaspoon ascorbic acid added to each 1 to $1\frac{1}{2}$ cups sirup).</p>

PREPARING AND PACKING

FRUIT	HOW TO PREPARE	HOW TO PACK
Cranberries ...	Pick over and wash.	Pack without sugar; or pack in 1 part by weight of sugar to 3 or 4 parts by weight of berries (1 cup sugar to 6 to 8 cups berries; or pack in sirup to cover (4 cups sugar to 4 cups water).
Figs	Sort, wash, remove stems. Leave whole, halve, or slice.	Pack without sugar; or pack in 1 part by weight of sugar to 4 parts by weight of fruit (1 cup sugar to 6 cups fruit); or pack in sirup to cover (3 cups sugar to 4 cups water).
Peaches (free-stone) and nectarines ...	Sort, pit, peel (skins may be loosened by scalding whole peaches 15 to 30 seconds in boiling water). Cut in sections. To keep from darkening, dip sections for 1 to 2 minutes in a solution of $\frac{1}{4}$ teaspoon citric acid dissolved in 1 quart water or use ascorbic acid (see How to Pack).	With citric acid. Pack in 1 part by weight of sugar to 3 or 4 parts by weight of fruit (1 cup sugar to $4\frac{1}{2}$ to 6 cups fruit); or in sirup to cover (3 cups sugar to 4 cups water). With ascorbic acid. Put peaches directly into sugar sirup to which has been added $\frac{1}{4}$ teaspoon ascorbic acid for each 1. to $1\frac{1}{2}$ cups sirup.
Plums and prunes	Sort, wash, halve, and pit.	Pack in 1 part by weight of sugar to 3 to 5 parts by weight of fruit (1 cup sugar to $4\frac{1}{2}$ to 10 cups fruit); or in sirup to cover (3 to 5 cups sugar to 4 cups water, with $\frac{1}{4}$ teaspoon ascorbic acid added to each 1 to $1\frac{1}{2}$ cups sirup).
Rhubarb	Wash, trim, and cut stalks into 1-inch pieces.	Pack without sugar; or pack in 1 part by weight of sugar to 4 or 5 parts by weight of rhubarb (1 cup sugar to 5 to 6 cups fruit); or in sirup to cover (3 cups sugar to 4 cups water).
Strawberries ...	Cap and sort, wash, and drain well. Leave berries whole, or slice.	Pack in 1 part by weight of sugar to 3 or 4 parts by weight of fruit (1 cup sugar to 5 to 8 cups fruit). Pack tightly so juice covers berries.

Head space:

In carton or bag, leave $\frac{1}{2}$ inch head space if packed without liquid. Leave 1 inch head space if packed with sirup, or for purees or crushed fruits.

In glass jars or tin cans leave $1\frac{1}{2}$ inches head space.

Packing fruit in dry sugar:

When packing fruits in dry sugar, be sure to mix thoroughly until all sugar is dissolved and sufficient sirup is formed to cover the fruit when packed. If necessary press fruit down in package until sirup covers the fruit.

COOKING FROZEN VEGETABLES

Cooking frozen vegetables to save their vitamins, bright color, and fresh flavor is like cooking fresh vegetables . . . except the frozen vegetables cook more quickly. The secret lies in using only a little water and cooking them quickly until just tender.

You can cook most frozen vegetables without thawing. Corn on the cob must be completely thawed and some vegetables such as greens, asparagus, and broccoli cook more evenly if thawed—just enough to separate the leaves or stalks. Partially thaw vegetables packed in brine; and use part of brine as cooking liquid. Never re-freeze thawed vegetables.

Cook only enough vegetables for one meal at a time. You can cut a large package in two before cooking, and keep the uncooked part wrapped and frozen. If you cook

Place frozen peas in from one-fourth to one-half cup lightly salted boiling water. Cover pan with a lid, keep water boiling steadily with low heat, and cook peas until just tender.



more than one package at a time or one large package, use a wide pan to speed cooking time.

The frost furnishes some moisture, so use only a small amount of water—one-fourth to one-half cup usually is enough for 4 to 5 servings. The amount depends on the size of the package and the time needed to cook the vegetables tender.

Bring lightly salted water to a boil. Add frozen vegetables, cover, and bring water back to a boil rapidly. Use a tight fitting lid so moisture forms steam for cooking. Then reduce heat, but keep it high enough so water boils steadily. Cook until vegetables are just tender; overcooking destroys flavor and texture. Since frozen vegetables are partly cooked before freezing, they cook tender in a shorter time than fresh ones.

Approximate Cooking Times for Frozen Vegetables

Cooking times for frozen vegetables will vary with variety and maturity of vegetable. You can use the times given below as a guide for cooking vegetables of your own pack. Be sure to bring the vegetables back to boiling before you start counting time.

	Minutes		Minutes
Asparagus	7	Corn, cut	5
Beans, lima	7-15	Corn, on cob	5
Beans, snap	12-15	Peas	7
Broccoli	7	Soybeans	10-15
Cauliflower	5	Spinach	5

THAWING FRUITS

Frozen fruits when thawed are ready to be served as dessert. But thaw only enough for one meal at a time. Fruit quickly loses its freshness after it has thawed—the texture becomes oversoft and the fresh flavor decreases. For a small family, cut a large package in two before thawing, but be sure to keep the unused part wrapped and frozen.

Serve berries while they still contain a few ice crystals. Though texture of peaches or similar fruits is better when they are still a little icy, flavor is improved by more complete thawing.

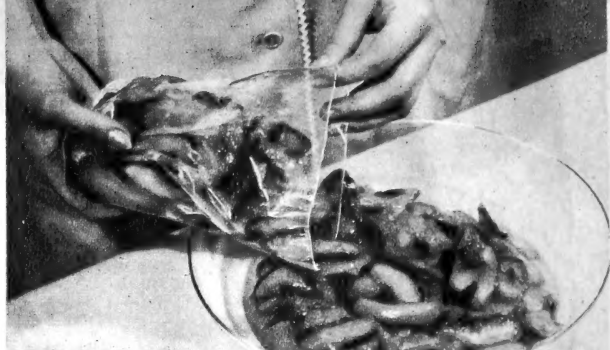
If you plan to cook the fruit, thaw it only enough to separate the pieces.

Always leave fruit in the sealed container during thawing for best flavor and color. Turn package several times during thawing to keep fruit coated with sirup and to prevent darkening. On the refrigerator shelf, it takes 6 to 8 hours to thaw a 1-pound package of fruit. At room temperature, the time is shortened to 2 to 3 hours. To thaw fruit quickly, place package in cool running water for a half to 1 hour. Fruit packed with dry sugar thaws more quickly than that packed with sirup.

Never refreeze fruits after thawing. To keep frozen fruits that have been thawed cook them first, then store in the refrigerator.

If you combine frozen fruits with other foods in recipes, be sure to allow for the sugar or sirup in which the fruit was packed. In some recipes, no more sugar will be needed.

Frozen fruit that has lost its fresh quality may still be used in recipes for cooked desserts.



Use frozen peaches or other fruit promptly after thawing. If you wish to use peach slices in salads, dip them, frozen or thawed, in citrus fruit juice to add tartness and retard darkening.

Frozen strawberries make excellent shortcake as do other berries and peaches. Arrange on cake while berries are still a little icy.

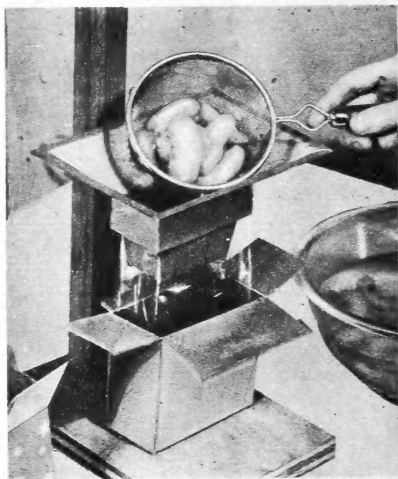
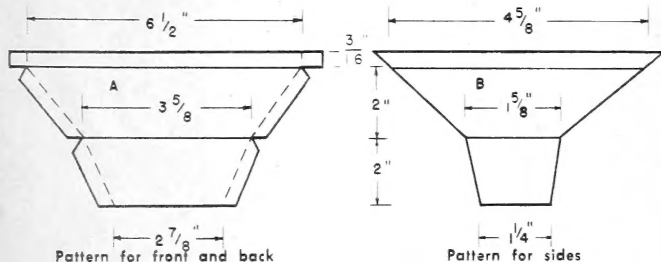
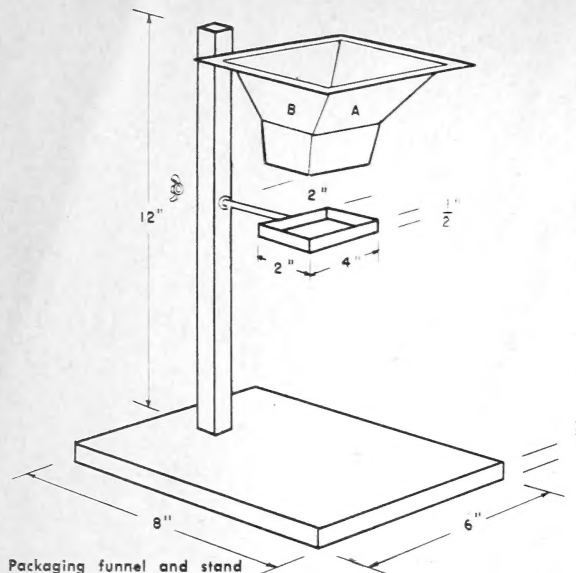


HOME-MADE EQUIPMENT... FOR FILLING PACKAGES

A funnel and stand make it easier to fill box or liner quickly with little chance for tears or spills. You can buy one, or any handyman who has equipment to work with tin can make this one shown.

The funnel is of tinned metal. The ring, made from a strip of the same metal, is soldered together where it joins the bolt. The narrow rim around top edge of funnel keeps liquids from running down on the package below. The mouth of the funnel extends deep enough into the package so sirups or foods do not touch the inside sealing edges of the liner.

Holes in the wooden standard make it easy to adjust the height of the funnel for different packages.



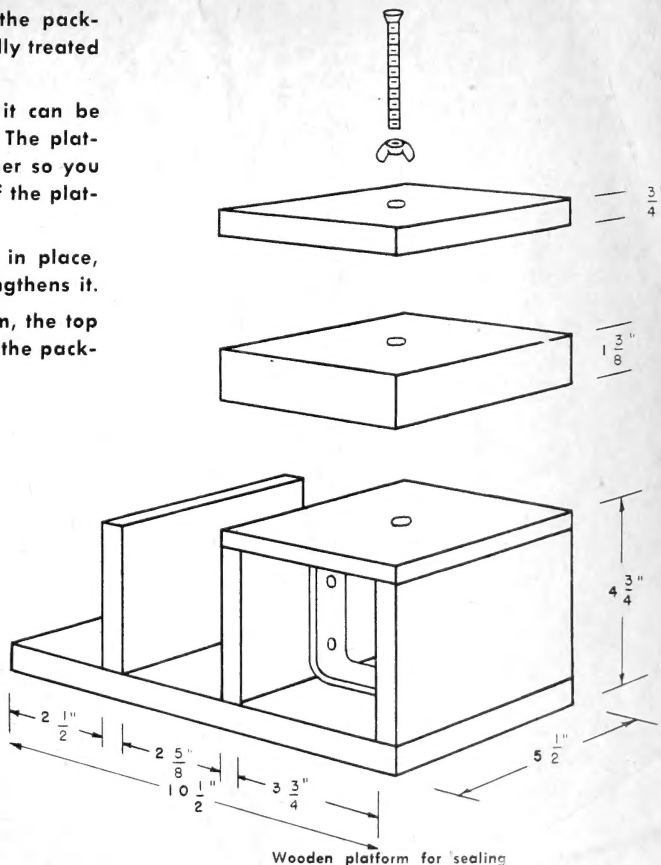
... FOR SEALING PACKAGES

This home-made wooden platform holds the package upright as you seal the edges of specially treated liners with a warm iron.

The platform has removable blocks so it can be adjusted for packages of different heights. The platform should be just as high as the container so you can draw the liner smoothly over the top of the platform to press out air before sealing.

A bolt with nut holds the blocks firmly in place, and an iron brace inside the platform strengthens it.

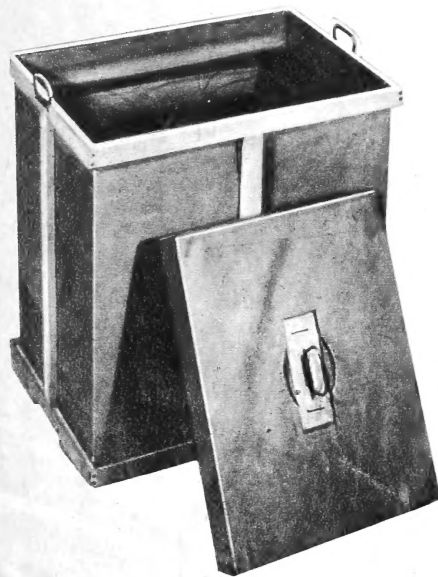
Though not so convenient as the platform, the top of a small wooden box the same height as the package may be used for sealing.



AN INSULATED CARRYING BOX

If you take packages of food to a locker plant for freezing, you'll need an insulated box. To make such a box, set a carton inside a larger one. Fill the space between the cartons with shredded paper or excelsior. Seal edges of box with gummed paper and use wooden strips to strengthen and hold box off floor. For the lid, use gummed strips of paper to hold together several layers of corrugated paper.

Or you can use two wooden boxes or two tin cans, or any other containers you have on hand that will provide 3 to 4 inches of space for insulation.



INDEX

Apples	18	Interruption of current	5
Apricots	18	Labeling	5
Asparagus	12	Nectarines. See Peaches ..	19
Beans, lima	12	Packaging	4, 22, 23
Beans, snap	12	Peaches	14, 19
Berries, except strawberries ..	18	Peas	8, 13
and blueberries		Peppers	13
Blueberries	18	Plums	19
Box, carrying	24	Prunes	19
Broccoli	10, 12	Rhubarb	19
Cauliflower	12	Scalding vegetables:	
Cherries	18	in boiling water... 3, 6, 8, 10	
Chilling vegetables	3	in steam	10
Containers, kind of	4	Sealing	4, 23
Cooking frozen vegetables... 20		Soybeans	13
Corn	6, 13	Storage	5
Cranberries	18	Strawberries	16, 19
Darkening, ways to prevent ..	2	Sweetening fruits	3
Figs	19	Temperature, freezing	5
Filling packages	22	Thawing fruits	21
Greens	13	Thawing vegetables	20
Head space	4	Varieties for freezing	2

Prepared by

Bureau of Human Nutrition and Home Economics
in cooperation with

Bureau of Agricultural and Industrial Chemistry
Agricultural Research Administration

U. S. Department of Agriculture
Washington, D. C.

May 1946

This publication supersedes AWI-100, How to Prepare
Vegetables and Fruits for Freezing